

PRO Water Equity, Inc.

Paso Robles Groundwater Basin Overliers for Water Equity

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P.O. Box 255, Templeton, CA 93465

August 4, 2015

Chairman Ken Topping
Commissioner Jim Irving
Commissioner Eric Meyer
Commissioner Jim Harrison
Commissioner Don Campbell

Re: Water Neutral New Development - Agricultural Offset Program

Dear Commissioners,

Recently, statements have been made regarding water usage values for vineyards as provided in various reports. A concern has been raised by some members of the public that the revision of 1.7 to 1.25 AFY/acre for vineyards would somehow affect the computer modeling results for the basin. The 1.7 and now 1.25 AFY/acre is being used solely as a standardized crop water duty factor for the offset program. This provides a "level playing" field in determining available offsets.

The computer model update, which establishes the basin's estimated annual yield of 89,600 AFY, used an entirely different methodology, assigning values based on soil and climatic conditions throughout the basin. There is not one single value used in the model for applied water in vineyards; rather the water use is assigned geospatially throughout the basin. Rainfall has a large impact on the amount of applied water. For example, the applied water in vineyards in 2011, an above average rain year, was estimated at 1.1 AFY/acre.

The well level data and the computer model update both provide substantial evidence that the Paso Robles Groundwater Basin is in overdraft. Using historic rainfall data, the situation in the basin is projected to get worse in the future. In addition to management of existing water uses, growth in water use must be restricted in order to balance the basin in the future - which is now required by the Sustainable Groundwater Management Act.

Attached is a summary of the vineyard water usage estimates and conclusions from these reports which we prepared for your information.

Mission Statement: To promote the health, safety, common good and general welfare of the community by advocating for the stabilization and sustainability of the Paso Robles groundwater basin for the benefit of all overlayers.

We hope that this document can help clear up some of the misunderstandings regarding this issue. Please contact us at info.prowaterequity@gmail.com with any questions.

The Board of PRO Water Equity, Inc.



Sue Luft
President



Laurie Gage
Vice President



Jan Seals
Treasurer



CC Coats
Secretary

cc: Xzandrea Fowler, SLO County Planning Department
Trevor Keith, SLO County Planning Department
Courtney Howard, SLO County Public Works
Mark Hutchinson, SLO County Public Works

Attachment - Water Use by Vineyards

Water Usage by Vineyards - Values Assumed by Various Reports And Situation in Paso Robles Groundwater Basin

Recently, statements have been made regarding water usage values for vineyards as provided in various reports. Here is a summary of the vineyard water usage estimates and conclusions from these reports. Most of these reports can be found at www.slocountywater.org.

Evaluation of Paso Robles Groundwater Basin Pumping, Water Year 2006, Todd Engineers, May 2009

Vineyard water use was estimated at 1.25 AFY/acre for the Atascadero, Bradley, Creston, and Estrella subareas and 1.5 AFY/acre for the North Gabilan, San Juan, Shandon, and South Gabilan subareas. This estimate was based on "Estimate of Vineyard Annual Water Consumption, Letter dated August 19, 2004 to the San Luis Obispo County Agricultural Commissioner's Office from University of California Agricultural & Natural Resources, Cooperative Extension, San Luis Obispo County", Mark Battany, 2004.

The estimated groundwater pumping in 2006 of 88,154 AFY was 90 percent of the estimated perennial yield of 97,700 AFY for the Paso Robles Groundwater Basin.

Paso Robles Groundwater Basin Water Balance Review and Update, Fugro West, March 2010

Estimated gross agricultural pumping in the Basin during 1997 by Fugro and Cleath (Fugro West, 2005) was used in conjunction with the corresponding Todd estimate during 2006 to estimate via straight-line interpolation the annual gross agricultural pumping in the Basin from 1998 to 2005. Annual gross agricultural pumping from 2007 to 2009 was subsequently estimated by extrapolation from the 2006 estimate by Todd (2009).

Based on a perennial yield of 97,700 AFY, the water balance for 1997-2009 showed outflows at 94-99% of the perennial yield.

Resource Capacity Study, SLO County, February 2011

In January, 2007, the Board of Supervisors directed preparation of a Resource Capacity Study (RCS) for the Paso Robles Groundwater Basin. A Level of Severity (LOS) I had been previously assigned to the Paso Basin due to declining well levels in the "cone of depression".

The RCS utilized Fugro's 2010 straight line projection for agricultural pumping for the years 2007-2009.

Several scenarios were developed using from 0.75/1.0 AFY/acre to 1.25/1.5 AFY/acre. These scenarios showed the perennial yield of 97,700 AFY was reached as early as 2011 to as late as 2025. (Keep in mind that the perennial yield is now estimated to be 89,600 AFY.)

The RCS recommended a LOS III for the Paso Robles Groundwater Basin.

April 2013 Grape Notes, UC Cooperative Extension, Update on Paso Robles vineyard irrigation study, Mark Battany, Viticulture/Soils Farm Advisor

“This article presents the first three years of results for the irrigation monitoring trial conducted in vineyards overlying the Paso Robles Groundwater Basin. This study period was characterized by having above-average rainfall overall and thus the irrigation amounts are likely not representative of drier seasons. The average annual irrigation applications for the 2010, 2011 and 2012 calendar years were 10.4, 8.3 and 12.0 inches respectively.” (Converted, these values are 0.87, 0.69 and 1.0 AFY/acre.)

Data was collected from 84 voluntary vineyards within the “Estrella-Creston Area of Concern”, which may not be representative of vineyards throughout the basin. Also, as stated in the report, the study period had above-average rainfall and may not be representative of drier seasons.

Results from the study revealed that measured irrigation rates varied widely in each of the three years, ranging from less than 5 inches to greater than 25 inches each year. (The converted values are 0.42 to 2.08 AFY/acre.)

Water Neutral New Development Implementation Language (Title 22)

Table 3 lists crop-specific applied water by crop type. This table is based on the Agricultural Water Offset Program, Paso Robles Groundwater Basin, October 2014 (RCD report), updated by UC Davis (Mark Battany) information. The RCD report utilized data from the County’s Master Water Report. A value of 1.7 AFY/acre was used in the RCD report. However, staff has updated that number to 1.25 AFY/acre based on discussions with Mark Battany.

Paso Robles Groundwater Basin Model Update, Geoscience/Todd Groundwater, December 2014

For each irrigated crop group, including vineyards, a set of daily soil water balances was developed. Each set of soil water balances was used to develop an array of reference crop irrigation demand rates over the model simulation period for the observed range of soil and climatic conditions across the basin and the surrounding watershed. Reference monthly irrigation demand schedules were matched to individual crop fields based on three parameters, including: 1) available soil water storage capacity (which is dependent on soil physical properties and crop rooting depth), 2) average annual precipitation, and 3) ETo zone. In addition, the effect of crop management practices for vineyards, including irrigation for frost-prevention, RDI, and use of cover crops were also considered in the soil water balances for vineyards.

Table 10 of the Model Update lists the calculated applied water for vineyards during the years 1981 through 2011. The report notes that irrigation efficiency has improved over time. Applied water rates are generally lower during years when annual rainfall is above average and generally higher when annual rainfall is below average. For example, the applied water in vineyards in 2011, an above average rain year, was estimated at 1.1 AFY/acre.

The simulated irrigation rates were compared to the measured irrigation rates in the April 2013 Grape Notes. Figure 50 shows a good correlation between the two sets of data.

Table 3-12 of the Model Update provides the annual irrigated crop acreages in the basin for the years 1980 through 2011. Vineyard acreage has increased since 2011, although the data in this report is only through 2011.

The Model Update used the updated and recalibrated Basin Model to estimate the perennial yield. For the period 1982 to 2010, the perennial yield was estimated to be 89,600 AFY. The average annual change in groundwater storage for 1981 to 2011 was calculated to be approximately -2,400 AFY.

Further, the Model Update estimated the overdraft into the future, using a no growth and a 1% growth scenario. In the no growth scenario, the overdraft is projected to be 5,600 AFY. In the growth scenario, the overdraft is projected to be over 26,000 AFY.

Conclusions

The concern raised by some members of the public that the revision of 1.7 to 1.25 AFY/acre for vineyards affects the modeling results is incorrect. The 1.7 and now 1.25 AFY/acre is being used solely as a standardized crop water duty factor for the offset program. This provides a “level playing” field in determining available offsets.

The model update, which establishes the basin’s estimated annual yield of 89,600 AFY, used an entirely different methodology, assigning values based on soil and climatic conditions throughout the basin. There is not one single value used in the model for applied water in vineyards; rather the water use is assigned geospatially throughout the basin. Rainfall has a large impact on the amount of applied water. For example, the applied water in vineyards in 2011, an above average rain year, was estimated at 1.1 AFY/acre.

The well level data and the computer model update both provide substantial evidence that the Paso Robles Groundwater Basin is in overdraft. Using historic rainfall data, the situation in the basin is projected to get worse in the future. In addition to management of existing water uses, growth in water use must be restricted in order to balance the basin in the future - which is now required by the Sustainable Groundwater Management Act.

Well level data which illustrates the situation in the Paso Robles Groundwater Basin

Well level change maps for 1997 - 2013

(<http://www.slocountywater.org/site/Water%20Resources/Water%20Forum/pdf/1997-2013SpringGWsurface.pdf>) and well level hydrographs

(<http://www.slocountywater.org/site/Water%20Resources/Water%20Forum/>) illustrate the situation in the groundwater basin. The hydrographs for the Creston subarea

(<http://www.slocountywater.org/site/Water%20Resources/Water%20Forum/pdf/Creston%20BMO%20with%20Paso%20Rain%20Station.pdf>) and the Estrella subarea

(<http://www.slocountywater.org/site/Water%20Resources/Water%20Forum/pdf/Creston%20BMO%20with%20Paso%20Rain%20Station.pdf>) clearly show that groundwater levels have been declining for many years, long before the current drought.



August 6, 2015



Chairman Ken Topping
Commissioner Jim Irving
Commissioner Eric Meyer
Commissioner Jim Harrison
Commissioner Don Campbell

Re: Water Neutral New Development component of the proposed Countywide Water Conservation Program

Dear Planning Commission,

Some questions have been raised recently about measurements of vineyard water use that I conducted in the Paso Robles Groundwater Basin, and whether or not this data contradicts conclusions based on modeling efforts. To clarify this issue, I collected this data with the primary purpose of helping produce the most accurate model results possible.

Over the past decade I have been associated with the modeling of the PRGWB by providing a wide variety of information about vineyard water use practices. In 2004 I provided an estimate of the annual irrigation application rates for vineyards over the PRGWB; this estimated value of 1.25 ft./yr. was subsequently used in the early modeling efforts. Recognizing that more research-based data was needed in this process going forward, I later conducted a comprehensive four-year study of irrigation applications at 84 vineyard sites located in the previous “red zone” of observed groundwater depression (the “Estrella-Creston Area of Concern”) during the 2010-2013 seasons. The average measured water application over this four-year period at these sites was approximately 1 ft./yr., slightly lower than my earlier estimate.

My main goal of conducting the above study was to provide more accurate data that could be incorporated into the expected further refinements of the basin groundwater models. As such, the data from this study was utilized in the most recent model update conducted by Geoscience and Todd Groundwater (2014), in particular being used to help calibrate the model output. I also had significant involvement with the modelers as they constructed the model to provide them with a wide variety of information about vineyard parameters related to water use; I am cited frequently in their final report as a reflection of this input. My involvement helped ensure that the many variables that they included in their very complex and comprehensive model were as representative as possible of local vineyard conditions, in order to produce the most accurate model output possible.

In my communications with the County staff regarding an amount of irrigation water to assign for vineyard use for purposes of calculating 1:1 offsets with other crops over the PRGWB, I have suggested that they use the amount of 1.25 ft./yr (as opposed to the value of 1.7 ft./yr. listed in the 2012 Master Water Report). This is because in my assessment, this is a more realistic amount of water that will be required for long-term sustainable and profitable production of wine grapes in the region, for typical vineyards that produce fruit to sell to wineries. At typical sites, this amount of water will more likely provide for economically viable yields of wine grapes, as well as provide sufficient additional water for leaching accumulated salts from the root zone over time. Low total crop value per acre and increasing soil salinity can be two serious problems affecting vineyards that do not receive sufficient irrigation in this region.

The determination of whether or not the PRGWB is being impacted by pumping in excess of recharge should be made with all available information. Our main information sources are the observations of groundwater levels, changes in performance or failure of wells, and the results of the ongoing groundwater modeling efforts. All of these concur that the PRGWB is being impacted by excessive pumping. The long-term piezometric data showing declines in groundwater levels are some of the clearest evidence available that pumping has been exceeding recharge for some time. Many growers and rural residents alike are having to lower pumps or drill deeper wells to reach adequate groundwater. Growers that are drilling new wells 1500 to 2000 feet deep are doing so at great cost; they would not do so without having a very clear need. These conditions have been exacerbated by the recent drought, but existed for some time beforehand.

Please do not hesitate to contact me if I can provide any clarification of these points or any additional information that you may require.

Sincerely,

A handwritten signature in black ink that reads "Mark Battany". The signature is written in a cursive, flowing style with a long, sweeping underline that extends to the right.

Mark Battany
Farm Advisor

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August 10, 2015

Chairman Ken Topping
Commissioner Jim Irving
Commissioner Eric Meyer
Commissioner Jim Harrison
Commissioner Don Campbell

Re: Water Neutral New Development - Agricultural Offset Program

Dear Commissioners,

PRO Water Equity would like to express our concern with the recently added exemption to Title 22, Section 22.30.204. B. 3.: “ Expanded irrigated crop production on sites with the same crop type that propose implementation of new water efficiency technologies, where satisfactory evidence is shown that those crops have been planted within the last five years, and shall not exceed the average water use of the existing crop production, as identified in Tables 2 and 3”.

There are a number of problems with this exemption. The crop water duty factors used for offsets are average numbers that are to put everyone on an “equal playing field”. For vineyards in Shandon, 1.25 AFY/acre may not be adequate water. In the Pomar area, that amount of water may be higher than needed. However, for purposes of the offset program, these values are adequate.

By allowing increased plantings where water use is less, water use in those areas will increase beyond the current water usage. This approach will not result in water neutrality, which is the goal of the program.

Many growers use new water efficiency technologies. Staff should not be asked to determine which of these technologies are commonly used best management practices vs. which are considered “new technologies”.

The proposed exemption will reward people with crops in areas with higher rainfall, and thus, crops which need less water. So, this exemption will probably only be used in the western portion of the basin (i.e the Pomar area or near the airport). These areas have already seen serious well

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level declines and need reductions in pumping or supplemental water instead of additional water demands.

Keep in mind that the offset program will be refined and/or replaced when the Groundwater Sustainability Plan is adopted. Other options of managing water use will be brought forward by the Groundwater Sustainability Agency. This interim program is intended to stop further declines in the basin in the meantime.

If your Commission chooses to include this exemption, we have some questions and requests. Was this exemption considered in the Supplemental Environmental Impact Report? The applicant should be required to provide at least five years of metered water use data. The increase in water use would need to be based on the year with the highest historic water use. Their future water use should be subject to metering and annual reporting to the County. The meters used for past and future water use must be calibrated on a regular schedule. All water uses must be taken into account, including leaching and frost protection. At no time in the future, wet year or dry year, could the 1.25 AFY/acre be exceeded.

Although we listed some conditions for the applicant above, we strongly urge your Commission to not include this exemption in the offset program.

Please contact us at info.prowaterequity@gmail.com with any questions.

The Board of PRO Water Equity, Inc.



Sue Luft
President



Laurie Gage
Vice President



Jan Seals
Treasurer



CC Coats
Secretary

cc: Xzandrea Fowler, SLO County Planning Department
Trevor Keith, SLO County Planning Department
Ellen Carroll, SLO County Planning Department

AUG. 10, 2015

San Luis Obispo County Planning Commission
San Luis Obispo, CA

Dear Planning Commissioners:

At a coffee-klatsch in Paso Robles last week, I had the pleasure of renewing a 35-yr. old acquaintance with Don Campbell from when our kids were in 4-H together. I thanked him for the Commission's wise choice to NOT act in haste and rubber-stamp the Board of Supervisors' poorly-thought-out plans for saddling this county's farmers with governance of their wells and water, but to take more time to get it right.

I decided I ought to tell all of you. (Please excuse my hand-writing this. I don't have a computer). There's just too much HISTORY, SCIENCE, and FACTS that the supes and their advisors and committees are not only ignoring; when brought up to them, they refuse to listen.

HISTORY: the supes are basing their entire basin management plan on the past 10 years only! That is ridiculous and irresponsible. During the drought of 1846-48, NO rain fell in Central California. This drought put the end to the old Spanish ranchos: they had only cattle for a cash crop, there was no pasture, they grew no hay or grain for cattle feed, cattle died by the thousands. The Californios went broke and sold out to the Americans (& others) who were already coming in. The ranches recovered under the

new mgt. and thousands of American-raised cattle were driven to the gold-fields a few years later to feed the miners. There were bad droughts in the 1860's and 1890's. The latter caused some hard times for farmers in our area, but they recovered. I understand the worst drought economically for California was in 1913-14. There was another bad drought in 1923-24, but farmers recovered so rapidly and successfully that Calif. Agriculture was what drew the dust-bowl refugees here and put them to work! This current drought only seems so severe because there are way more people with way higher expectations, and certain factions are using scare tactics to grab power and establish a new source of funding for State & County governments. Shame on them!

SCIENCE: (Disclaimer: I have no degrees, am not an expert in anything, learned basic earth science in public school, from reading, listening, trial-&-error, doing.) 75% of the earth's surface is water, including ice, wet-lands, & fog. The elements that make up the earth and everything in and on it were deposited here when the earth was "born" in the "big bang". Elements cannot be made nor destroyed, even if pulverised to dust or vapor they are still with us. Water is a mix of 2 elements, Hydrogen in 2 parts to Oxygen in 1 part. It can be made in a lab. It can be solidified in to ice, vaporized into steam & into the air,

the liquid form is what we all worry about, legislate about, etc. etc. But it doesn't "go away" by wasteful farming, "global warming", or any other scare-mongering. What evaporates comes back to earth as rain or snow, maybe not where we want it to. What goes into the ground goes right back into our aquifers. Don Campbell is the first person I've heard say this to a group of worried well-owners — what you pump from your little well and pour on your little plot of dirt goes right down, back into your aquifer or down the river to someone else's — it doesn't vanish for all time! This includes the water we bathe in, wash our dishes and clothes and cars with, and flush down our toilets. It's not GONE. It works its way, being filtered by our soil, into our wells and back up again. Every drop of water we use is millions of years old — the Earth itself is the best, most efficient recycler!

FACTS: San Luis Obispo county is large and has many many microclimates. In the frost-pocket I live in, Whitley Gardens, we have gotten down to 0° twice in the 40 years we've farmed here, yet they grow avocados and citrus in the coastal valleys! SLO county also has a myriad of soil types. I only have 3 acres — the far west end is Estrella River bottom sand and gravel with such a rapid percolation rate that I have to water seedlings 15 min. per day. That soil NEVER makes puddles or mud. 400 ft. away in my West garden, every hard rain rolls rivers of

clay silt off the half-mile ^{west of us,} of steep barley fields onto my dirt, which stays wet and gummy for weeks after every hard rain. And this is just my TINY plot of land. Every farmer in the county has different soil challenges concerning how much water is needed to make their crops economical. You can't make one cookie-cutter rule for all our area farmers! When discussing the amount of water used by the county's vineyards, the statistics I've seen are based on number of acres of grapes, without factoring out the numerous DRYLAND UNIRRIGATED VINEYARDS. Why?

The supes' money-making plan to tax ("charge a fee") every well-head, so many dollars for every irrigated acre and a lesser fee for the non-irrigated acres is outrageous! Don't they understand that our dry-land grass is our soil's treasure - it insulates the ground (inc. tree-roots) from the heat of the sun, and acts as a giant sponge to store moisture and wick it down into our aquifers? The grazing animals on it enrich it with their manure and abate fire-danger by eating off the dry growth and brush - we should be PAYING them, not charging them a "fee" for what they DON'T irrigate.

Two other things I think they ^(supes) are waiting for your input on are the "cash for grass" and "rat out your neighbor" plans. This latter has even been given a web-site by the State

gov't! So they must be planning on getting enough money via fines to pay for the additional CODE ENFORCEMENT OFFICERS that will be needed just to investigate neighbors tattling on each other, who may be involved in a feud already that has nothing to do with "wasting" water! Have we really sunk that low?! The "cash for grass" - I would think the piles of brand-new mulch and plastic ground-cloth clogging the storm sewers, littering the gutters and even piled up on sidewalks should have showed that program to be pure folly and a potential environmental nightmare as it clogs up waterways, but apparently the city, county, and state still think its a great idea. Its not - let common sense prevail.

To sum up: We already have a flood control district, which can and does and has been managing our aquifer system. We don't need another bureaucracy and should not be expected to finance one. Please, please get the super to look at and listen to HISTORY, SCIENCE, FACTS and COMMON SENSE, and stop with the lies and scare tactics. It is much too large an issue to do otherwise. Legal challenges are already in the works and we don't even have a final draft of the plan yet!

Thank you.

PAMELA LEAL

Pamela Leal

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